

# Mineral Industry Surveys

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## MOLYBDENUM IN NOVEMBER 2004

Domestic production of molybdenum in concentrate in November 2004 was about 20% more than that of the previous month and was about 77% more than that of November 2003, according to the U.S. Geological Survey. Year-to-date production of molybdenum in concentrate from January through November was 23% more than during the same period in 2003. Producer stocks of molybdenum in concentrate, oxide, and other product forms were about 4,730 metric tons (t) at the beginning of 2004 and 5,490 t at the end of November.

According to Ryan's Notes (2004), the November monthly average prices for U.S. ferromolybdenum (FeMo) ranged from \$30.125 to \$31.500 per pound of molybdenum content, compared with \$23.667 to \$25.333 in October. European FeMo monthly averages ranged from \$68.750 to \$71.000 per kilogram (kg) of molybdenum content in November as compared with \$58.444 to \$61.889 in October. In November, worldwide molybdenum oxide prices ranged from \$24.781 to \$25.425 per pound versus \$20.972 to \$21.856 in October.

For the third consecutive month, European ferromolybdenum prices increased and were over \$70 per kg in November as compared with about \$20 per kg in January. Analysts observed that the closure of the Glossop conversion facility, which removed 3,000 metric tons per year (t/yr) of ferromolybdenum production capacity, adversely affected the market at a time when supply was limited. Asian ferromolybdenum prices continued to benefit from strong Chinese demand, as Hong Kong free market prices increased by about \$13 per kg in November (Metal Bulletin Research, 2004).

The board of Compania Minera Dona Ines de Collahuasi approved a \$40 million project to produce molybdenum concentrate from its copper mine in northern Chile. Concentrates will be extracted from the new Rosario deposit

owing to much higher molybdenum content in the ore than in the nearby Ujina pit. The plant, to be built at the company's Puerto Patache port facility, is expected to produce between 4,500 to 7,000 t/yr of contained molybdenum, depending on ore grade, with production expected to commence in late 2006 (Platts Metals Week, 2004b).

Corporación Nacional del Cobre de Chile's (Codelco) molybdenum production increased to 24,021 t in the first 9 months of 2004, up 59% from that of the same period of 2003. Codelco, the world's second-leading producer of molybdenum, reported record earnings based on high molybdenum and copper prices. Molibdenos y Metales (Molymet) sold 24,809 t of molybdenum in the first 9 months of 2004, up 43% from that of the same period of 2003. Molymet produced ferromolybdenum and molybdenum oxide at plants in Chile, Belgium, Germany, and Mexico (Platts Metals Week, 2004a).

Included in this Mineral Industry Surveys are U.S. production and shipments of molybdenum concentrates and materials, U.S. consumption by end use, and stocks of molybdenum material in October and November 2004, and trade data for September and October 2004.

## References Cited

- Metal Bulletin Research, 2004, Molybdenum highlights, Prices strengthen further: Metal Bulletin Research, Ferro-alloys Monthly, no. 147, November 23, p. 14.  
Platts Metals Week, 2004a, Codelco moly output up 59%: Platts Metals Week, v. 75, no. 46, November 15, p. 12.  
Platts Metals Week, 2004b, Collahuasi to OK Mo plant: Platts Metals Week, v. 75, no. 48, November 29, p. 6.  
Ryan's Notes, 2004, [untitled]: Ryan's Notes, v. 10, no. 49, December 6, p. 4.

TABLE 1  
U.S. SALIENT MOLYBDENUM CONCENTRATE STATISTICS<sup>1</sup>

(Metric tons, contained molybdenum)

	2003	2004		Year to date
	January-December	October	November	
Production	33,500	3,550	4,280	37,900
Shipments: <sup>2</sup>				
Domestic	25,900	2,710	2,630	27,900
Export	7,660	917	1,270	9,690

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>As reported by producers.

TABLE 2  
U.S. REPORTED PRODUCTION AND SHIPMENTS OF MOLYBDENUM PRODUCTS<sup>1</sup>

(Metric tons, contained molybdenum)

	2003	2004		Year to date
	January-December	October	November	
Gross production	41,400	6,330	5,870	59,700
Internal consumption <sup>2</sup>	29,600	3,890	3,870	37,700
Gross shipments	30,100	3,410	3,200	35,600

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Includes molybdic oxides, metal powder, ammonium molybdate, sodium molybdate, and other.

TABLE 3  
U.S. REPORTED CONSUMPTION, BY END USES, AND CONSUMER STOCKS OF MOLYBDENUM MATERIALS<sup>1</sup>

(Kilograms, contained molybdenum)

End use	Molybdc oxides	Ferro molyb- denum <sup>2</sup>	Ammonium and sodium molybdate	Molyb- denum scrap	Other	Total
2004, October:						
Steel:						
Carbon	32,200	W	--	--	W	32,200
High-strength low-alloy	32,500	19,600	--	--	11,300	63,400
Stainless and heat-resisting	215,000 <sup>r</sup>	66,100 <sup>r</sup>	--	W	6,780	288,000 <sup>r</sup>
Full alloy	137,000	171,000	--	--	1,510	309,000
Tool	31,700	W	--	--	--	31,700
Total	448,000 <sup>r</sup>	256,000 <sup>r</sup>	--	W	19,600	724,000 <sup>r</sup>
Cast irons (gray, malleable, and ductile iron)	W	10,200 <sup>r</sup>	--	--	763	11,000 <sup>r</sup>
Superalloys	86,100	W	--	(3)	115,000	201,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	6	6
Other alloys	112	1,930	--	--	20	2,060
Mill products made from metal powder <sup>4</sup>	--	--	--	--	143,000	143,000
Cemented carbides and related products <sup>5</sup>	--	--	--	--	W	W
Chemical and ceramic uses:						
Pigments	--	--	W	--	--	W
Catalysts	77,300	--	W	--	W	77,300
Other chemicals	--	--	--	--	2,100 <sup>r</sup>	2,100 <sup>r</sup>
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	14,200 <sup>r</sup>	14,200 <sup>r</sup>
Other	1,090	45,300	75,300	16	16,800	138,000
Grand total	613,000 <sup>r</sup>	314,000 <sup>r</sup>	75,300	16	311,000 <sup>r</sup>	1,310,000 <sup>r</sup>
Stocks, October 31, 2004	403,000 <sup>r</sup>	304,000	5,840	15,100	862,000 <sup>r</sup>	1,590,000
2004, November:						
Steel:						
Carbon	33,700	W	--	--	W	33,700
High-strength low-alloy	25,400	19,000	--	--	11,300	55,800
Stainless and heat-resisting	206,000	64,700	--	W	6,780	277,000
Full alloy	134,000	167,000	--	--	1,510	302,000
Tool	56,000	W	--	--	--	56,000
Total	455,000	250,000	--	W	19,600	725,000
Cast irons (gray, malleable, and ductile iron)	W	11,000	--	--	763	11,800
Superalloys	63,600	W	--	(3)	126,000	190,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	6	6
Other alloys	208	2,400	--	--	20	2,620
Mill products made from metal powder <sup>4</sup>	--	--	--	--	118,000	118,000
Cemented carbides and related products <sup>5</sup>	--	--	--	--	W	W
Chemical and ceramic uses:						
Pigments	--	--	W	--	--	W
Catalysts	77,300	--	W	--	W	77,300
Other chemicals	--	--	--	--	1,670	1,670
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	19,500	19,500
Other	1,090	52,500	75,700	16	16,800	146,000
Grand total	597,000	316,000	75,700	16	303,000	1,290,000
Stocks, November 30, 2004	430,000	268,000	6,570	22,800	860,000	1,590,000

<sup>1</sup>Revised. W Withheld to avoid disclosing company proprietary data; included in "Other" of the "Miscellaneous and unspecified uses" category. -- Zero.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Includes calcium molybdate.

<sup>4</sup>Included in "Other" of the "Superalloys" category.

<sup>5</sup>Includes ingot, wire, rod, and sheet.

<sup>6</sup>Includes construction, mining, oil and gas, metalworking machinery.

TABLE 4  
U.S. EXPORTS OF MOLYBDENUM ORES AND CONCENTRATES  
(including roasted concentrate), BY COUNTRY<sup>1</sup>

(Kilograms, contained molybdenum)

Country	2003	2004		Year to date
	January-December	September	October	
Australia	102,000	--	5,820	24,800
Austria	--	496,000	--	1,310,000
Belgium	3,190,000	1,030,000	182,000	5,550,000
Brazil	42,600	2,450	3,510	25,200
Canada	910,000	96,800	130,000	1,180,000
Chile	368,000	--	--	1,380,000
China	82,600	--	--	36,000
Costa Rica	22,500	1,230	--	26,000
India	44,300	430	--	430
Italy	20,300	--	--	--
Japan	2,000,000	876,000	146,000	5,520,000
Korea, Republic of	61,400	6,100	5,600	91,400
Mexico	3,730,000	667,000	389,000	3,210,000
Netherlands	10,900,000	2,610,000	418,000	12,400,000
Sweden	25,700	--	--	--
Taiwan	9,590	5,670	--	18,600
United Kingdom	7,880,000	1,260,000	1,000,000	7,940,000
Other	137,000	805,000	132,000	2,670,000
Total	29,500,000	7,850,000	2,410,000	41,400,000

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 5  
U.S. EXPORTS OF FERROMOLYBDENUM, BY COUNTRY<sup>1</sup>

(Kilograms, contained molybdenum)

Country	2003	2004		Year to date
	January-December	September	October	
Australia	873	--	--	1,090
Canada	547,000	35,400	34,500	735,000
Denmark	241	--	--	--
Japan	61	--	--	--
Mexico	43,100	--	--	33,700
Netherlands	25,500	--	--	--
United Kingdom	--	--	--	491
Total	617,000	35,400	34,500	771,000

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF MOLYBDENUM PRODUCTS<sup>1</sup>

(Kilograms, unless otherwise specified)

Material	January-December 2003			October 2004		
	Gross weight	Contained molybdenum	Value (c.i.f.) <sup>2</sup> (thousands)	Gross weight	Contained molybdenum	Value (c.i.f.) <sup>2</sup> (thousands)
Ore and concentrates roasted	6,310,000	3,960,000	\$41,900	743,000	449,000	\$16,900
Ore and concentrates other	2,870,000	1,230,000	9,580	799,000	399,000	15,100
Molybdenum chemicals:						
Oxides and hydroxides	1,300,000	NA	9,780	96,700	NA	2,460
Molydates of ammonium	1,620,000	937,000	11,600	340,000	211,000	3,100
Molydates (all others)	324,000	145,000	1,200	1,090	540	19
Molybdenum orange	987,000	NA	4,440	71,700	NA	347
Ferromolybdenum	5,740,000	3,690,000	38,200	435,000	276,000	10,500
Molybdenum powders	57,000	43,100	2,000	12,600	9,820	686
Molybdenum unwrought	139,000	136,000	1,700	5,110	5,110	124
Molybdenum waste and scrap	425,000	388,000	5,000	32,400	25,100	666
Molybdenum wire	10,600	NA	776	1,640	NA	190
Molybdenum other	79,900	NA	6,420	15,400	NA	1,480
Total	19,900,000	10,500,000	133,000	2,550,000	1,380,000	51,600

NA Not available.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Cost, insurance, and freight at U.S. ports.

Source: U.S. Census Bureau.